WHAT IS CLAIMED IS:

1. A switched reluctance drive comprising:

a rotor,

a stator having a winding, and

a controller having means for selectively connecting either of a first and a second voltage source to supply the winding, and an energy return path between the winding and the second voltage source to allow energy to be transferred from the winding to the second voltage source when the first voltage source is used to supply the winding, thereby to charge the second voltage source.

2. A switched reluctance drive as claimed in claim 1, wherein the second voltage source is charged up to a predetermined value, preferably greater than that of the first voltage source, for example, two or three times that of the first voltage source.

3. A switched reluctance drive as claimed in claim 1, wherein the first and second voltage sources are arranged in series.

4. A switched reluctance drive as claimed in claim 1, wherein the first and second voltage sources are arranged in parallel.

5. A switched reluctance drive as claimed in claim 1, wherein the first and second voltage sources each include a capacitor connected across it in parallel.

6. A switched reluctance drive as claimed in claim 1, wherein the energy return path comprises a diode that is connected between one end of the winding and the second voltage source in such a way as to transfer energy from the winding to the second voltage source.

7. A switched reluctance drive as claimed in claim 1, wherein the means for selectively connecting either of the first and the second voltage sources to supply the winding comprises a first switch and a second switch that are arranged in parallel, the first switch being connected in use between the winding and the first voltage source and the second switch being connected in use between the winding and the second voltage source, so that when the first switch is opened and the second switch is closed, the second voltage source is used to supply the winding.

8. A switched reluctance drive as claimed in claim 7, wherein a third switch is provided for connecting the winding to a common terminal of both of the first and second voltage sources.

9. A switched reluctance drive as claimed in claim 7, in which the means for selectively connecting further comprises a control means for actuating the first, second or third switch.

10. A switched reluctance drive as claimed in claim 1, wherein the means for selectively connecting either of the first and/or the second voltage sources to supply the winding comprises a change-over switch that is operable in one position to connect the first voltage source to supply the winding and in another position to connect the second voltage source to supply the winding.

11. A switched reluctance drive as claimed in claim 10, wherein the winding is connected between and in series with a pair of switches.

12. A switched reluctance drive as claimed in claim 1, further comprising a detector for detecting when the second voltage source is charged to a predetermined level.

13. A switched reluctance drive as claimed in claim 12, further comprising means for modifying operation of the drive to reduce the energy transferred to

the second voltage source, when the second voltage source is charged to the predetermined level.

14. A switched reluctance drive as claimed in claim 1, wherein the drive is a polyphase drive.

15. A method of operating a switched reluctance drive comprising a rotor and a stator having a winding, the method comprising:

connecting a first voltage source to the drive so as to supply the winding;

switching the first voltage source on and off across the winding;

transferring energy from the winding to a second voltage source when the first voltage source is switched off, thereby to charge the second voltage source, and

selectively connecting the second voltage source so as to supply the winding.

16. A method as claimed in claim 15, wherein the second voltage source is charged up to a predetermined value higher than the voltage rating of the first voltage source.

17. A method as claimed in claim 16, wherein the predetermined value is

two or three times that of the first voltage source.

18. A method as claimed in claim 15, wherein the first and second voltage sources are arranged in series.

19. A method as claimed in claim 15, wherein the first and second voltage sources are arranged in parallel.

20. A method as claimed in claim 15, wherein the first and second voltage sources each include a capacitor connected across it in parallel.

21. A method as claimed in claim 15, wherein the step of transferring involves directing energy from the winding to the second voltage source via an energy return path that comprises a diode that is connected between one end of the winding and the second voltage source in such a way as to transfer energy from the winding to the second voltage source.

22. A method as claimed in claim 15, wherein the winding is connected in series with and between a pair of switches and the step of switching involves switching the pair of switches between open and closed positions.

23. A method as claimed in claim 15, comprising detecting when the second voltage source is charged to a predetermined level.

24. A method as claimed in claim 23, comprising modifying the step of switching to reduce the energy transferred to the second voltage source when it is charged to a predetermined level.